

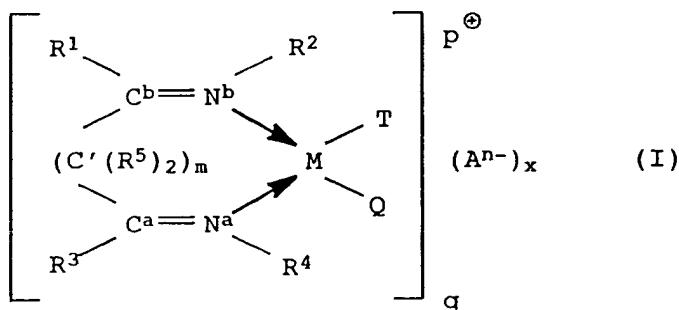
We claim:

1. A transition metal compound of the formula

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where the substituents and indices have the following meanings:

- 20       $R^1, R^3$  are hydrogen,  $C_1-C_{20}$ -alkyl,  $C_3-C_{10}$ -cycloalkyl,  
 $C_6-C_{16}$ -aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and from 6 to 16 carbon atoms in the aryl part,  $Si(R^6)_3$ ,  $N(R^6)(R^7)$ ,  $OR^6$ ,  $SR^6$  or  $R^1$  and  $R^3$  together with  $C^a$ ,  $C^b$  and, if present,  $C'$  form a five-, six- or seven-membered aliphatic or aromatic, substituted or unsubstituted carbocyclic or heterocyclic ring,
- 25       $R^2, R^4$  are  $C_4-C_{16}$ -heteroaryl or  $C_6-C_{16}$ -aryl bearing  $C_4-C_{16}$ -heteroaryl or  $C_6-C_{16}$ -aryl substituents in the two vicinal positions relative to the linkage point to  $N^a$  or  $N^b$ ,
- 30       $R^5$  is hydrogen,  $C_1-C_{10}$ -alkyl,  $C_6-C_{16}$ -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and from 6 to 16 carbon atoms in the aryl part,
- 35       $R^6, R^7$  are  $C_1-C_{10}$ -alkyl,  $C_6-C_{16}$ -aryl or alkylaryl having from 1 to 10 carbon atoms in the alkyl part and from 6 to 16 carbon atoms in the aryl part,
- 40       $m$  is 0 or 1,
- 45       $M$  is a metal of group VIIIB of the Periodic Table of the Elements,
- $T, Q$  are uncharged or monoanionic monodentate ligands or  $T$  and  $Q$  together form a diketoenolate unit or a  $C_2-$  or

$C_3$ -alkylene unit having a methyl ketone end group or a linear  $C_1-C_4$ -alkylester or nitrile end group,

A is a noncoordinating or weakly coordinating anion,

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x, p are 0, 1, 2 or 3 and

q, n are 1, 2 or 3.

- 10 2. A transition metal compound as claimed in claim 1, wherein  $R^2$  and  $R^4$  are, independently of one another, 2,6-diphenylphenyl, 2,6-di(4'-methylphenyl)phenyl, 2,6-di(4'-t-butylphenyl)phenyl, 2,6-di(4'-methoxyphenyl)phenyl,
- 15 2,6-bis(3',5'-dimethylphenyl)phenyl or 2,6-bis(2',4',6'-trimethylphenyl)phenyl or 2,5-diphenylpyrrolidyl, 2,5-di(4'-methylphenyl)pyrrolidyl, 2,5-di(4'-t-butylphenyl)pyrrolidyl, 2,5-di(4'-methoxyphenyl)pyrrolidyl,
- 20 2,5-bis(3',5'-dimethylphenyl)pyrrolidyl or 2,5-bis(2',4',6'-trimethylphenyl)pyrrolidyl or 2,5-diphenylpyrrolide, 2,5-di(4'-methylphenyl)pyrrolide, 2,5-di(4'-t-butylphenyl)pyrrolide, 2,5-di(4'-methoxyphenyl)pyrrolide,
- 25 2,5-bis(3',5'-dimethylphenyl)pyrrolide or 2,5-bis(2',4',6'-trimethylphenyl)pyrrolide.
3. A transition metal compound as claimed in claim 1 or 2, wherein  $R^2$  and  $R^4$  are 2,6-di(4'-methoxyphenyl)phenyl or
- 30 2,5-di(4'-methoxyphenyl)pyrrolidyl.
4. A transition metal compound as claimed in any of claims 1 to 3, wherein M is palladium or nickel.
- 35 5. A transition metal compound as claimed in any of claims 1 to 4, wherein T is halide or methyl and Q is halide.
6. A catalyst system for the (co)polymerization of olefinically unsaturated monomers, comprising as active constituents a
- 40 transition metal compound as claimed in any of claims 1 to 5 and a strong uncharged Lewis acid, anionic compound having a Lewis-acid cation or an ionic compound having a Brönsted acid as cation as cocatalyst.

7. A catalyst system as claimed in claim 6, wherein an aluminoxane compound is used as strong uncharged Lewis acid or  $\text{NaB}[\text{C}_6\text{H}_3(\text{CF}_3)_2]_4$  is used as ionic compound having a Lewis-acid cation.
- 5       8. A process for preparing polymers of olefinically unsaturated polar and/or nonpolar monomers, which comprises polymerizing the starting monomers in the presence of a catalyst system as claimed in claim 6 or 7.
- 10      9. A process as claimed in claim 8, wherein ethene is used as starting monomer.
- 15      10. The use of a transition metal compound as claimed in any of claims 1 to 5 or the catalyst system as claimed in claim 6 or 7 for the (co)polymerization of olefinically unsaturated polar and/or nonpolar monomers.

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Polymerization active transition metal complexes having bulky ligand systems

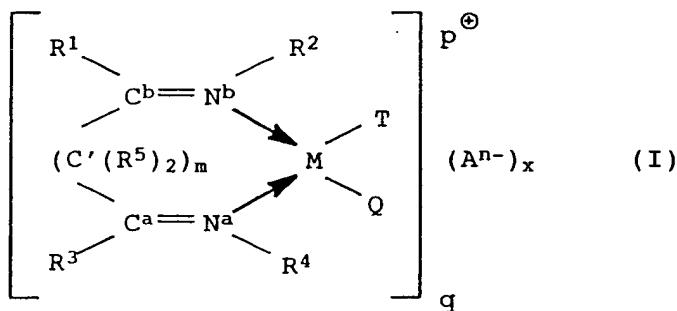
5 Abstract

Transition metal complexes having bulky ligand systems and the formula (I)

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where

25      R<sup>2</sup>, R<sup>4</sup>    are C<sub>4</sub>-C<sub>16</sub>-heteroaryl or C<sub>6</sub>-C<sub>16</sub>-aryl bearing  
              C<sub>4</sub>-C<sub>16</sub>-heteroaryl or C<sub>6</sub>-C<sub>16</sub>-aryl substituents in the two  
              vicinal positions relative to the point of linkage to N<sup>a</sup>  
              or N<sup>b</sup> and

30      M            is a metal of group VIIIB of the Periodic Table of the  
              Elements,

are described.

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